

UNITED STATES NAVAL OBSERVATORY
CIRCULAR NO. 29

U. S. Naval Observatory, Washington 25, D. C.

May 4, 1951

POSITIONS, AREAS, AND COUNTS OF SUNSPOTS

JANUARY - FEBRUARY

By Lucy T. Day

These results are based upon measurements made at the Naval Observatory on plates secured either there or at the Mt. Wilson Observatory. The symbols used for the entries in the successive columns are as follows:

U.T., the epoch of observation in Universal Time.

No., the identifying number of the group assigned by Mt. Wilson.

Δl , the heliographic difference in longitude from the central meridian, measured positive to the west.

φ , the heliographic latitude, measured positive to the north.

ρ , the heliocentric angular distance from the line joining the centers of the Earth and Sun.

A , the true area of the umbra plus penumbra, expressed in millionths of the visible hemisphere.

s , the number of spots.

An asterisk means that no Mt. Wilson number was assigned. Plates secured at the Naval Observatory are indicated by N, and those at Mt. Wilson by W. The plate quality, which follows, is indicated by:

1, Poor; 2, Fair; 3, Good; 4, Very Good; 5, Excellent.

The following five quantities are listed successively at the end of each day, and give for that day:

1. The total number of groups, g .
2. The longitude of the central meridian, L_0 .
3. The latitude of the center of the disc, B_0 .
4. The total value of A .
5. The total value of s .

The mean daily area and the mean relative sunspot number, $r=10g+s$ are given at the end of the month.

These results are a continuation of those published in the *Monthly Weather Review* from February 1, 1927 to December 31, 1947.

JANUARY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
1.647	10562	-61	-12	62	48	2	8.635	10564	-25	-20	28	16	3
N-2	10558	+70	+12	70	73	1	N-3	10564	-21	-20	26	12	2
	(2)	(58)	(-3)		121	3		10562	+27	-15	28	121	3
2.653	10562	-50	-13	51	73	1		10562	+30	-13	32	145	10
N-2	10562	-47	-11	47	97	2		10562	+33	-11	34	73	6
	(1)	(45)	(-3)		170	3		10562	+33	-13	34	97	1
3.742	10562	-39	-13	41	73	4		10562	+36	-10	37	194	2
N-2	10562	-36	-10	37	24	1		10568	+71	+8	72	6	1
	10562	-33	-11	35	97	2		(3)	(326)	(-4)		664	28
	10562	-32	-9	33	48	1	9.682	10571	-40	-18	42	12	2
	(1)	(31)	(-3)		242	8	N-3	10571	-39	-21	42	6	1
4.678	10564	-83	-17	83	6	1		10567	-38	+11	41	36	2
N-3	10562	-27	-13	30	145	6		10570	-10	-20	19	12	6
	10562	-27	-11	28	48	10		10562	+40	-16	42	145	3
	10562	-21	-12	23	121	12		10562	+43	-13	44	121	11
	10562	-18	-9	19	24	2		10562	+47	-12	47	73	1
	10563	-26	+36	46	16	7		10562	+49	-10	49	206	1
	(*)	+12	-13	15	6	5		10569	+60	+25	65	6	1
	(4)	(18)	(-3)		366	43		(5)	(312)	(-4)		617	28
5.665	10564	-71	-19	71	36	2	10.640	10567	-24	+11	28	48	1
N-2	10562	-13	-13	15	242	8	N-2	10562	+54	-17	55	121	2
	10562	-9	-11	12	194	7		10562	+60	-12	60	109	1
	10562	-5	-10	8	24	2		10562	+62	-17	62	6	1
	(2)	(5)	(-3)		496	19		10562	+64	-10	64	242	1
6.651	10564	-59	-21	60	6	1		(2)	(300)	(-4)		526	6
W-3	10564	-58	-19	58	12	3	11.655	10567	-9	+12	18	36	1
	10565	-57	+6	58	6	1	N-2	10572	+26	+20	35	48	1
	10566	-55	+8	57	12	2		10572	+27	+20	36	12	2
	10562	+1	-13	9	267	17		10572	+30	+18	37	61	3
	10562	+3	-11	7	61	10		10562	+69	-17	69	194	3
	10562	+7	-12	11	291	8		10562	+73	-13	73	109	1
	10562	+8	-13	12	145	5		10562	+80	-10	80	194	2
	(4)	(352)	(-4)		800	47		(3)	(286)	(-4)		654	13
7.647	10567	-68	+12	70	24	1	12.655	10572	+39	+19	44	61	1
W-3	10564	-44	-18	45	6	1	N-2	10572	+42	+18	47	61	1
	10564	-38	-19	46	12	1		(1)	(273)	(-4)		122	2
	10562	+14	-13	17	218	13	13.650	10572	+51	+20	56	97	4
	10562	+15	-12	17	61	7		(1)	(260)	(-4)		97	4
	10562	+17	-13	20	12	7	14.717	10574	-43	+17	48	16	2
	10562	+20	-12	22	339	8	W-3	10574	-39	+16	43	12	1
	(3)	(339)	(-4)		672	38		10572	+65	+18	68	24	4

JANUARY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
	10572	+69	+18	71	24	2		10576	+50	+5	52	36	6
	(2) (246)	(-4)			76	9		10574	+51	+15	55	73	14
								10574	+56	+15	58	61	8
15.696	10574	-31	+17	37	24	2		(4) (154)	(-5)			240	38
N-3	10574	-28	+16	36	36	1							
	10574	-25	+15	32	48	2	22.644	10580	-81	-11	81	145	1
	(*)	+31	-15	33	12	3	N-3	10579	-79	-10	79	48	2
	(2) (233)	(-5)			120	8		10579	-78	-9	78	145	1
16.651	10574	-17	+17	28	73	7		10577	-23	-5	23	6	1
N-3	10574	-16	+15	25	24	3		10575	-12	+13	23	36	1
	10574	-14	+17	27	61	2		10578	-1	-4	1	12	1
	10574	-12	+14	23	36	1		10578	+2	-5	0	48	5
	(1) (221)	(-5)			194	13		10576	+57	+7	58	24	1
17.708	10575	-80	+13	80	145	1		10576	+64	+5	65	24	2
N-2	10574	-4	+16	22	24	6		10574	+65	+16	69	97	4
	10574	-3	+11	16	12	1		10574	+67	+15	70	48	1
	10574	0	+16	21	145	7		(7) (142)	(-5)			633	20
	10574	+3	+13	18	48	2							
	(2) (207)	(-5)			374	17	23.645	10582	-78	+7	78	485	1
18.652	10575	-67	+13	70	145	1	W-3	10582	-73	+6	73	24	3
N-3	10576	-1	+6	11	12	1		10579	-67	-10	67	97	2
	10576	+1	+10	15	73	6		10579	-62	-9	62	194	1
	10574	+9	+15	23	97	1		10579	-62	-7	62	6	1
	10574	+12	+15	24	97	6		10580	-67	-11	67	97	1
	(3) (194)	(-5)			424	15		10581	-62	+10	64	48	8
19.645	10577	-61	-4	61	12	1		10577	-8	-5	8	6	1
N-3	10575	-53	+13	55	97	1		10575	+2	+12	16	6	1
	10576	+13	+8	18	48	8		10578	+14	-5	14	48	10
	10576	+18	+6	22	48	5		10576	+70	+7	72	16	2
	10574	+23	+15	25	97	9		10574	+80	+15	80	73	6
	10574	+27	+16	33	97	8		(9) (129)	(-5)			1100	37
	(4) (181)	(-5)			399	32	24.774	10582	-71	+7	72	194	4
20.681	10575	-39	+13	42	73	1	N-3	10582	-70	+9	71	97	1
N-2	10576	+27	+8	31	24	1		10582	-68	+7	69	12	1
	10576	+32	+7	34	24	1		10582	-62	+8	64	582	4
	10576	+34	+6	36	48	1		10582	-57	+5	58	48	1
	10574	+36	+15	40	61	4		10579	-53	-11	54	12	3
	10574	+41	+16	46	73	5		10579	-48	-9	48	291	1
	(3) (168)	(-5)			303	13		10579	-48	-7	48	6	1
21.732	10577	-36	-6	36	6	1		10580	-53	-12	54	61	1
W-3	10575	-25	+13	30	48	1		10580	-51	-11	52	6	1
	10576	+43	+8	45	16	8		10581	-50	+11	52	97	5
								10581	-45	+9	47	109	4
								(*)	+15	+9	21	12	1
								10578	+28	-4	28	12	5
								(6) (114)	(-5)			1539	33
							25.782	10582	-58	+7	60	194	4
							N-3	10582	-57	+9	59	97	1

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U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s	
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$			
	10582	-50	+ 6	52	48	2		10580	-15	-12	15	61	1	
	10582	-50	+ 8	52	291	1		10581	-13	+11	22	48	1	
	10582	-46	+ 7	48	388	1		10581	- 7	+ 8	16	61	5	
	10579	-40	-10	40	24	1		10581	- 3	+ 8	15	242	4	
	10579	-34	- 9	34	242	1		10583	+ 6	-12	7	36	6	
	10580	-40	-12	41	61	1								
	10581	-38	+11	42	145	4		(7)	(76)	(-6)		2023	58	
	10581	-31	+ 9	34	170	2								
	10583	-20	-13	22	12	1								
	(5)	(100)	(-5)		1672	19								
26.701	10584	-76	+24	78	145	1		28.753	10585	-60	+24	68	97	2
N-3	10582	-44	+ 7	48	97	5		N-3	10584	-47	+24	56	121	1
	10582	-43	+ 9	46	97	1			10584	-44	+22	53	6	1
	10582	-41	+ 8	44	73	6			10582	-16	+ 7	21	412	15
	10582	-37	+ 8	41	436	11			10582	- 8	+ 7	17	339	11
	10582	-36	+ 5	38	121	6			10582	- 4	+ 8	6	727	10
	10582	-32	+ 8	35	339	11			10579	0	-11	5	12	4
	10579	-28	-11	28	12	1			10579	+ 8	- 9	8	24	2
	10579	-22	- 9	22	291	2			10579	+ 9	- 8	9	194	1
	10580	-28	-12	28	61	1			10580	0	-13	7	48	1
	10581	-25	+10	30	97	5			10581	+ 4	+ 9	16	97	6
	10581	-23	+ 9	27	24	1			10581	+ 8	+ 8	17	24	5
	10581	-18	+ 8	23	242	6			10581	+12	+ 9	19	291	1
	10583	- 9	-10	10	36	4								
	10583	- 8	-12	10	73	3			(6)	(61)	(-6)		2392	60
	(6)	(88)	(-6)		2144	64								
27.663	10585	-75	+25	80	97	1		31.703	10585	-21	+25	36	24	4
N-3	10584	-62	+24	69	145	1		W-3	10584	- 8	+25	33	48	1
	10582	-30	+ 7	33	97	3			10582	+22	+ 7	26	24	6
	10582	-30	+ 9	34	85	1			10582	+29	+ 8	32	388	40
	10582	-26	+ 8	30	291	8			10582	+29	+ 5	33	97	7
	10582	-24	+ 6	25	121	7			10582	+37	+ 9	41	921	5
	10582	-19	+ 8	20	485	6			10581	+46	+ 9	50	170	25
	10579	-15	-11	15	36	13			10581	+51	+10	54	242	2
	10579	- 9	- 9	10	218	1			10581	+54	+13	60	24	2
									10579	+50	- 7	50	145	1
									10579	+49	- 8	49	24	4
									10583	+59	-11	59	24	2
									10583	+63	-13	63	48	9
									(6)	(22)	(-6)		2179	108

Mean for 29 days, $A=737$, $r=63.3$

FEBRUARY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
1.717	10587	-28	-11	28	61	10	5.936	10592	-72	+12	75	12	1
W-2	10585	-9	+25	34	12	4	W-2	10591	-14	+21	31	12	1
	10584	+3	+26	32	36	1		10591	-9	+19	27	12	1
	10584	+7	+25	32	24	8		10588	+16	-15	18	36	3
	10586	+5	-6	5	16	2		10587	+30	-10	30	36	3
	10582	+38	+8	42	194	23		10587	+37	-10	37	97	3
	10582	+40	+5	40	48	4		10584	+58	+25	68	16	5
	10582	+45	+8	46	48	10		(5) (314)	(-6)			221	17
	10582	+50	+9	52	824	1							
	10581	+56	+8	58	97	16	6.653	10592	-62	+11	65	48	1
	10581	+60	+12	63	121	3	N-2	10588	+28	-15	30	16	4
	10581	+63	+11	67	194	1		10587	+49	-11	49	85	1
	10579	+60	-7	60	145	2		(3) (304)	(-6)			149	6
	10583	+72	-11	72	97	3							
	(8) (9)	(-6)			1917	88	7.903	10595	-79	+5	79	97	1
2.679	10587	-13	-11	14	48	6	W-2	10592	-48	+11	52	24	5
N-2	10587	-10	-10	11	61	3		10594	-46	-4	46	48	2
	10584	+17	+24	36	61	5		10594	-44	-5	45	24	2
	10584	+22	+23	35	73	1		10593	-10	+8	17	16	2
	10582	+56	+7	58	97	10		10591	+18	+19	32	24	2
	10582	+56	+4	58	24	2		10588	+40	-15	41	24	2
	10582	+62	+9	65	824	1		10587	+62	-11	62	97	1
	10581	+70	+9	73	194	5		(7) (288)	(-6)			354	17
	10581	+75	+9	78	145	1							
	10581	+77	+7	79	194	1	8.660	10595	-67	+6	70	145	1
	10579	+75	-7	75	121	1	N-2	10596	-45	-4	46	24	1
	(5) (356)	(-6)			1842	36		10596	-40	-4	40	16	4
3.651	10587	0	-12	6	73	8		10592	-36	+12	41	24	1
W-3	10587	+4	-11	7	24	4		10592	-32	+10	36	32	1
	10587	+5	-10	6	145	4		(*)	-3	-4	3	12	1
	10584	+31	+25	45	36	1		(*)	-2	-4	2	12	1
	10584	+33	+23	45	24	7		10588	+52	-14	52	24	1
	10584	+37	+24	49	36	1		10587	+73	-12	73	97	1
	10582	+74	+9	77	776	1		(6) (278)	(-6)			386	12
	(3) (344)	(-6)			1114	26	9.665	10597	-82	-12	82	242	1
4.740	10588	-1	-16	10	16	5	W-2	10595	-55	+5	58	73	1
W-3	10588	+3	-15	9	16	1		10596	-33	-4	33	61	10
	10587	+13	-12	14	36	11		10596	-28	-5	28	73	1
	10587	+19	-9	19	12	1		10592	-22	+12	29	36	4
	10587	+20	-10	20	145	1		10592	-19	+10	25	24	1
	10584	+46	+26	58	24	1		10594	-17	-4	18	36	8
	10584	+48	+25	58	6	1		10588	+66	-14	66	24	2
	10584	+48	+23	57	6	5		(6) (264)	(-7)			569	28
	10584	+51	+24	60	24	4							
	10590	+46	+17	53	6	4	10.698	10597	-70	-13	71	242	2
	10590	+47	+15	52	12	2	N-2	10600	-41	+9	44	12	1
	10589	+51	+8	54	12	4		10600	-40	+7	42	24	2
	10589	+62	+6	64	16	7		10600	-40	+10	43	48	1
	(5) (329)	(-6)			331	47		10600	-37	+9	41	61	2
								10595	-40	+3	42	73	2

FEBRUARY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
	10596	-18	-5	18	73	3		10602	+48	+7	50	24	4
	10596	-15	-6	15	73	1		10602	+51	+7	53	24	5
	10596	-13	-7	13	48	1							
	10592	-8	+10	19	170	3		(6) (198)	(-7)			567	34
	10592	-5	+8	17	73	3							
	10599	-4	+15	23	16	6	15.668	10604	-56	+12	58	16	2
	10598	+16	-19	20	48	2	W-3	10603	-35	-2	36	24	1
	10588	+79	-14	79	145	2		10603	-33	-2	34	24	4
	(8) (251)	(-7)			1106	31		10601	-30	+12	35	73	3
11.901	10601	-82	+13	83	97	1		10601	-24	+12	31	145	2
W-2	10597	-55	-13	55	97	1		10597	-2	-14	7	16	1
	10600	-25	+11	31	73	1		10595	+27	+4	31	16	1
	10600	-23	+11	30	61	3		10602	+61	+7	63	36	1
	10600	-18	+10	25	24	2		10602	+65	+7	66	48	3
	10595	-25	+5	28	97	2		(6) (185)	(-7)			398	18
	10592	+9	+10	19	97	3							
	10592	+11	+8	19	61	2	16.793	10604	-43	+12	47	73	2
	10599	+13	+16	27	61	3	N-2	10601	-15	+12	24	48	1
	10599	+15	+16	28	48	2		10601	-9	+12	21	170	1
	(6) (235)	(-7)			716	20		10597	+11	-14	13	48	1
12.647	10601	-70	+11	72	145	2		10595	+42	+4	44	48	1
N-3	10601	-67	+12	69	242	2		(4) (171)	(-7)			387	6
	10597	-44	-13	44	97	1	17.859	10604	-29	+12	34	48	5
	10600	-15	+9	23	73	1	N-2	10604	-27	+11	32	12	1
	10600	-12	+9	20	73	4		10601	-1	+12	19	73	1
	10600	-9	+8	18	48	5		10601	+5	+12	20	121	1
	10595	-14	+4	18	73	1		10597	+25	-14	26	24	1
	10599	+21	+15	31	36	5		(3) (157)	(-7)			278	9
	10599	+25	+14	32	24	1							
	10592	+22	+9	26	48	6	18.702	10605	-85	+12	85	97	1
	10592	+23	+6	27	73	5	N-2	10604	-16	+12	25	16	5
	(6) (225)	(-7)			932	33		10604	+10	+12	22	6	1
13.645	10603	-58	-1	58	12	1		10601	+15	+13	25	24	1
N-2	10601	-58	+11	61	194	3		10601	+16	+12	26	145	1
	10601	-52	+12	55	218	1		10597	+37	-14	37	24	1
	10597	-30	-14	31	61	1		(4) (145)	(-7)			312	10
	10600	-2	+9	17	24	4							
	10600	+1	+9	17	24	1	19.885	10605	-71	+11	72	485	2
	10595	0	+4	11	48	1	W-1	10605	-68	+10	69	97	3
	(5) (212)	(-7)			581	12		10605	-68	+12	70	97	1
14.694	10603	-47	-1	47	48	6		10601	+31	+13	37	145	1
N-4	10603	-44	-2	45	24	2		(2) (130)	(-7)			824	7
	10601	-44	+11	48	145	3	20.653	10605	-63	+8	66	48	8
	10601	-38	+12	42	194	2	W-3	10605	-62	+12	65	194	4
	10597	-16	-14	18	48	1		10605	-59	+12	61	242	2
	10600	+13	+9	21	24	7		10605	-57	+12	60	121	7
	10595	+13	+4	18	36	4		10605	-57	+8	59	97	10
								10601	+40	+13	44	16	3

FEBRUARY

U.T.	No.	Δl	φ	ρ	A	s	U.T.	No.	Δl	φ	ρ	A	s
		$^{\circ}$	$^{\circ}$	$^{\circ}$					$^{\circ}$	$^{\circ}$	$^{\circ}$		
	10601	+37	+12	41	97	4		(1)	(67)	(-7)		993	30
	(2)	(120)	(-7)		815	38	25.731	(*)	-65	-13	65	24	5
21.671	10605	-49	+9	51	48	4	W-2	10605	+7	+12	21	242	12
W-1	10605	-48	+12	52	97	3		10605	+8	+9	18	97	17
	10605	-46	+12	50	291	1		10605	+12	+12	22	291	8
	10605	-46	+8	48	73	12		10605	+13	+10	22	291	7
	10605	-44	+12	48	145	7		10605	+15	+12	24	97	6
	10606	-34	+12	39	16	1		(2)	(53)	(-7)		1042	55
	10601	+54	+13	58	24	7	26.688	10609	-61	-12	61	48	1
	10601	+56	+12	58	48	2	N-3	10605	+21	+10	27	339	20
	(3)	(106)	(-7)		742	37		10605	+26	+10	32	436	12
22.682	10605	-34	+10	38	24	1		10605	+26	+8	31	24	4
N-2	10605	-33	+14	39	24	2		10605	+30	+11	35	121	10
	10605	-30	+9	34	48	3		(2)	(40)	(-7)		968	47
	10605	-29	+12	35	630	1	27.663	10609	-47	-12	47	48	2
	10601	+70	+12	72	97	1	N-3	10605	+35	+10	38	267	11
	(2)	(93)	(-7)		823	8		10605	+39	+10	43	388	9
23.683	10605	-26	+7	30	24	6		10605	+44	+11	48	61	2
N-4	10605	-19	+12	27	145	7		(2)	(27)	(-7)		764	24
	10605	-19	+10	25	48	10	28.647	10610	-45	-15	45	48	3
	10605	-15	+12	24	436	18	N-3	10610	-42	-14	42	36	1
	10605	-13	+12	23	73	4		10609	-35	-12	35	24	1
	10605	-13	+10	22	24	9		10609	-33	-12	33	12	1
	10605	-8	+10	18	12	6		10608	+1	-8	1	24	1
	(1)	(80)	(-7)		762	60		10607	+13	+4	18	48	2
24.638	10605	-7	+12	20	291	5		10605	+48	+12	51	109	7
N-3	10605	-7	+9	17	145	8		10605	+50	+10	52	242	12
	10605	-3	+12	19	218	5		10605	+54	+10	57	194	12
	10605	0	+9	16	194	6		(5)	(15)	(-7)		737	40
	10605	+1	+12	19	145	6							

Mean for 28 days, $A=737$, $r=70.6$